

CLAIM AMENDMENTS

27-30. (Canceled)

31. (New) A method for moving charged particles through a medium employing an electrical field, said method comprising:

providing a device comprising (a) a substrate having an upper surface, (b) a main trench in the substrate extending downward from the upper surface, and (c) a plurality of electrodes positioned at intervals, including at each terminus, along the trench such as to be in electrical contact with a medium when present in the trench, the plurality of electrodes being connected to an electronic computer programmed to activate electrodes to provide an electrical field profile along the trench to move charged particles;

placing a sample of the charged particles into the medium in the device; and

applying a voltage from a voltage source across each adjacent pair of electrodes of a magnitude such that the electrical field generated across the plurality of electrodes is larger than that achieved in applying a voltage from the voltage source across the electrodes positioned at each terminus of the main trench.

32. (New) The method of claim 31, wherein said substrate is an organic polymer solid substrate.

33. (New) The method of claim 32, wherein said organic polymer solid substrate is polymethylmethacrylate, polycarbonate, polyethylene terephthalate, or polystyrene.

34. (New) The device of claim 32 wherein said organic polymer solid substrate has a substantially uncharged surface.

35. (New) The device of claim 31 wherein said main trench has capillary dimensions.

36. (New) The method of claim 31, wherein said intervals are between 1 and 100 microns in distance.

37. (New) The method of claim 31, wherein said intervals are regular intervals.

38. (New) The method of claim 31, wherein said plurality of electrodes are activated sequentially.

39. (New) A method for moving charged particles through a medium employing an electrical field, said method comprising:

providing a device comprising (a) a substrate having an upper surface, (b) a main trench in the substrate extending downward from the upper surface, (c) a plurality of branch trenches connected to said main trench for moving charged particles into and out of said main trench, and (d) a first plurality of electrodes positioned at intervals, including at each terminus, along the main trench and a second plurality of electrodes positioned at the termini of each branch trench such as to be in electrical contact with a medium when present in the trenches, the first and second plurality of electrodes being connected to an electronic computer programmed to activate electrodes to provide an electrical field profile along the trenches to move charged particles;

placing a sample of the charged particles into the medium in the device; and

applying a voltage from a voltage source across each adjacent pair of electrodes along the main trench of a magnitude such that the electrical field generated across the first plurality of electrodes is larger than that achieved in applying a voltage from the voltage source across the electrodes positioned at each terminus of the main trench.

40. (New) The method of claim 39, wherein said substrate is an organic polymer solid substrate.

41. (New) The method of claim 40, wherein said organic polymer solid substrate is polymethylmethacrylate, polycarbonate, polyethylene terephthalate, or polystyrene.

42. (New) The device of claim 40, wherein said organic polymer solid substrate has a substantially uncharged surface.

43. (New) The device of claim 39, wherein said main trench has capillary dimensions.

44. (New) The method of claim 39, wherein said intervals are between 1 and 100 microns in distance.

45. (New) The method of claim 39, wherein said intervals are regular intervals.
46. (New) The method of claim 39, wherein said plurality of electrodes are activated sequentially.